CONSTRUCTION OF NORMS FOR 10 TO 14 YEARS BOYS AND GIRLS OF TRACK AND FIELD PROBABLES

SYNOPSIS FOR PRE-THESIS COLLOQUIUM

Submitted By
VASANTHA KUMAR

Under the Supervision of

Dr. KISHORE KUMAR C. K.
Director of Physical Education and Chairman
Department of P.G. Studies and Research in
Physical Education and Sports
Mangalore University
Mangalagangotri-199

DEPARTMENT OF P.G. STUDIES AND RESEARCH IN PHYSICAL EDUCATION AND SPORTS
MANGALORE UNIVERSITY
Mangalagangotri - 574 199

APRIL 2015

SYNOPSIS FOR PRE-THESIS COLLOQUIUM

1. INTRODUCTION :

Practical Education in any profession or a 'course' of diet and exercise for developing physical strength, endurance and speed, children have to be active every day. Physical activity stimulates growth and leads to improved physical and emotional health. Today research shows that the importance of physical activity in children is stronger than ever. But sports not just exercise gives a child more than just physical well being, it contributes to a child's development physiologically and psychologically. (Dr. Glyn. Robert).

The Most commonly observed behavior of children is physical activity. This activity can be in the form of play exercise or sports. This activity can convert into the performance sports with competitive level, to bring that level talent identification plays a very important role. To find out the talent is through motor quality performance test only. That norm is depending upon specific basic motor quality aspects. Evaluation is essential in the process of teaching and coaching. Through evaluation, a teacher and coach can know the extent to which learning has taken place. Hence, the teachers and coach must be aware of some evaluation techniques, which will enable him to measure the student's skill objectively and classify them initially as well as by measuring the progress made by them. There are few skill tests in various physical activities, which help to measure the playing abilities of the students in different games and sports.

Sports skill test are designed to measure the basic skills used in the playing of a specific sport. Because of the wide range of skills in most sports, a selection of the most important skill is invariably necessary. The selection is usually based keeping in mind the literature available, opinion of experts as well as by applying appropriate statistical techniques. The skill items collectively are called test battery. The skill test helps the students to evaluate their performance in the fundamental skills the game and to provide an incentive for improvement. The test also serves the purpose of helping the teachers/coach to measure student's/player's performance and to evaluate their own teaching/coaching procedure and programme.

Norms are necessary if the test scores are to be adequately interpreted. There are several types and it depends on the purposes of the test and the characteristics of the group to be tested as to which type is selected. The procedure for developing norms starts

with the collection of scores on the test from a large sampling of students from the population for which the test was intended. The large collection of scores can be converted into some type of normative scores. On the basis of these norms performance and achievement can be adequately evaluated, scores can be properly interpreted and groups can be compared.

There is a lack of standardized evaluative skill tests in Track and field Events for assessing the ability, grading and predicting the performance of athletes. Everyone desired that had norms were constructed, this would have been an excellent skill test. Keeping the response from various quarters, the scholar was motivated to add something worthwhile to the existing test by developing norms.

Physical fitness has been identified by various components (Larson 1940, Philips 1949, McKinney and Donald 1972, Liba 1967, Jackson 1971, McHone et al., 1952, McCraw 1949, McCloy 1937 etc) like muscular strength, muscular endurance, endurance, dynamic strength, agility, speed, explosive power etc., through performance in physical variables or test items.

In India, the institutional set-up, the student behaviour and attitudes, their food habits and living style etc., may together contribute in deciding the physical fitness standard of our school going children. Physical fitness level of our school children may differ significantly to a greater extent in comparison with American and European standards. The developed physical fitness test batteries of other countries may not suit our own standards. Considering these facts, the construction of physical fitness test battery for high school boys in terms of native standard was deemed necessary. The purpose of this study was to construction of Norms for 10 to 14 years of boys and girls of Track and field probables.

Through evaluation, a teacher/coach can know the extent to which learning has taken place. Hence, the teacher/coach must be aware of some evaluation techniques, which will enable him to measure the student's/player's skill objectively and classify them initially as well as by measuring the progress made by them. There is few skill tests in various physical activities, which help to measure the playing abilities of the students/players in different games and sports skill test are designed to measure the basic skills used in the playing of a specific sport. Because of the wide range of skills in most sports, a selection of the most important skill is invariably necessary. The selection is

usually based keeping in mind the literature available, opinion of experts as well as by applying appropriate statistical techniques. The skill items collectively are called test battery. The skill test helps the students to evaluate their performance in the fundamental skills of the game and to provide an incentive for improvement. The game calls for no sophisticated equipment what so ever, which makes it a very popular sport in the developing countries. Though it is basically an out door sport played on clay court, of late the game is being played on synthetic surface indoors with great success (Prasad & Rao, 2002).

Norms are necessary if the test scores are to be adequately interpreted. There are several types and it depends on the purposes of the test and the characteristics of the group to be tested as to which type is selected. According to Rothstein, (1985) the procedure for developing norms starts with the collection of scores on the test from a large samples from the population for which the test was intended. The collected scores can be converted into some type of normative scores. On the basis of these norms performance and achievement can be adequately evaluated, scores can be properly interpreted and groups can be compared.

The concept of physical fitness has become a point of attraction in our country. Many schemes have been launched by the government of India and Karnataka Government to improve physical fitness of its citizens and to generate interest among people towards such activities which may ultimately improve their physical fitness and event performance. The basic elements of physical fitness are muscular strength, muscular endurance, basic speed and circulatory endurance. The aspects of construction of norms mainly to extract of actual performance of basics like speed, endurance, power, strength, agility flexibility and coordinative abilities.

Fitness tests allow boys and girls and coaches to identify physical strengths and weaknesses. They act as a benchmark upon which a suitable event can be developed. In fact without an initial assessment any subsequent training may only address already strong areas while neglecting the weak points. There are several reasons why fitness tests should form an integral part of the overall conditioning plan. A series of suitably selected tests builds a physical profile of the probable athletes. A benchmark can be set for each component of fitness. By comparing where the probable boys and girls will stand in required fitness mark.

Over the course of the past twenty years an increasing amount of attention has been devoted to the field of athletics. Whether it is a selection of athletes at school or college level, organizations have been faced with public pressure to be successful. As a result, athletic directors and general managers have been faced with the question of how to select the probable and to improve their teams' success. One obvious way of doing this is to select qualified personnel for the tasks at hand. The method by which athletes are selected for a team can have a significant impact on that team's success. In the past, decisions have been made based largely on judgments of an individual's physical characteristics with little attention given to the psychological factors that contribute to athletic success. Coaches have relied on informal judgments of constructs such as an athlete's motivation and level of aggression to determine their potential to succeed. Everyone has heard stories of athletes that were told they lacked the physical skill to perform but due to the psychological resources of drive and determination, these individuals have overcome their physical limitations and gone on to be highly productive individuals. The identification, quantification and implementation of these psychological attributes in selection decisions can therefore have a significant impact on a program's success.

In order to succeed it is important that all young athletes train for an event they are best suited for. This is achieved only when the performance capacities and potential can be accurately determined. Body proportions can often be decisive in establishing the work capacity of an athlete. The relative upper body and leg length, for example, is important in running events. Runners should therefore have a short trunk and long legs.

Studies have shown that physique and certain performance capacities are inherited and genetically established. Inherited characteristics that react poorly to outside influences are physique, flexibility, aerobic capacity, reaction time, coordination, agility, speed characteristics and relative strength. All these are classified as being largely inherited. In contrast, only two characteristics react easily to outside influences - body weight and absolute muscle strength. An exact selection criterion must be applied to events that require predominantly inherited physique and functional characteristics. Training brings here only limited improvement because the changes to the genetic structure are extremely restricted. Talent for these events should be found from a large mass, attempting to discover young athletes who have a suitable genetic structure for a particular event.

During this age (10 to 14 years) boys and girls performance are natural and untrained. The motor ability which dominates in the event in the future days will be cleared in the beginning of the selection of the event. Sprint speed is the product of stride length (SL) and stride frequency (SF) (Speed = SL x SF) in order to increase speed, one or both of these variables must be changed. It is the result influencing factor. Leaps are manifest in every movement generally speaking persons capable of highly skilled motor performance in specific athletic ability are high in physical strength. This is particularly true on an individual basis, i.e. when the strength and endurance factors for a particularly person is below normal, he is capable of less in physical performance of skill.

Contemporary performance demands are so high in track and field that athletes with average ability are not going to succeed, even if the best training methods are employed. This stresses the importance of correct selection procedures for a particular event. Unfortunately the procedures are not always efficient in our Sports centers, reflected in a high drop-out rate and studies showing that 50% of those accepted fail to achieve the expected results. With this researcher felt that it is the right time to develop specific norms according to age which has also necessary to select young athlete at an early stage endeavored with suitable physical and motor qualities region wise who can better future prospect in a given event. To formulate the standard norms on the basis of selected anthropometric and motor quality variables in the form of percentile to determines their present fitness status and potentiality for specific sports activity.

Hence researcher found that there is a dire need for selection procedures to guide young boys and girls, based on model anthropometric measurements and physical performance characteristics.

1.1 Justification of the Study

It has been already discussed in the introductory part about the study. On this view the main purpose of this study is to construct the norms for boys and girls to identify the required motor abilities like speed, strength and endurance to be selected the right event at the age of 10 to 14 years among boys and girls.

1.2 Statement of Problem

The study is to “Construction of Norms for 10 to 14 years boys and girls of Track and Field Probable athletes”

1.3 Objectives of the Study

1. The study provides standardized norms for Physical Education Teachers, Trainers, and coaches etc to select the probable athletes.
2. The study is useful for the Government Schemes like Sports schools, sports hostels, Sports academies and Center of Excellence for Sports.
3. The constructed norms can be used for the performance evaluation of the athletes during training.
4. This study can be used to find out physical and physiological fitness of the boys and girls.
5. The result of the study provides an additional knowledge to the research field.
6. The study may be helpful to identify sports talents based on speed, strength and endurance and also to identify suitable events based on their abilities.

1.4 Limitations

1. Researcher has no control over ecological conditions of the different testing centers during data collections.
2. Test was conducted in varied surface at different testing centers among different years.
3. To get the best out of the probable during the test period no special motivational technique will be employed which is considered as another limitation.
4. Diet, regular practice, past experience, sports training and participation in competition, meteorological factors are not taken into consideration is another limitations.
5. Test records were collected from the different government and non government organizations from the office records.
6. The life style and food habits of the subjects were not considered as limitations.
7. The age of the subjects were ranged from 10 to 14 years.
8. The date of birth of the students as entered in the admission register in the schools were taken as final valid document.

1.5 Delimitations

1. The study is confined to 10 to 14 years of age group boys and girls of Karnataka State.
2. The study is restricted to construct norms for the selection of boys and girls on the basis of motor qualities like speed, strength and Endurance.
3. Probable athletes selected from Bangalore, Mysore, Belgaum and Gulbarga divisions of the Karnataka state.
4. The study confined to 3000 boys and 2600 girls of Karnataka State.

1.7 Hypotheses

1. It was hypothesized that there would be a significant difference in sprinting ability between boys and girls of 10 to 14 years age group.
2. It was hypothesized that 10 to 14 years of age boys shows significant difference in strength performance compared to girls.
3. It was hypothesized that there would not be significant difference between boys and girls in endurance ability among 10 to 14 years group.

1.8 Definitions of Terms

Construction

Published tests are fitness not available or not exactly suitable for the particularly situation. It becomes necessary for to construct the own test with criteria of validity, reliability and other basic principles.

Norms

Norms are values considered to be representative of a specified population. Norms are based on age, height, weight and grade, Norm's tables for physical performance these are separate scales for boys and girls.

Speed

Speed and its production is a complex subject it is not simply a question of doing things quickly. The development of speed is a combination of the four major training elements i.e. strength endurance skill and mobility.

Strength

The greater the force executed on a body the faster and further it will go increases relative and elastic strength. Initially strengths involves two basics concepts that is Absolute strength and relative strength. Muscular strength and muscular endurance of human or the foundation of the physical capacity for all activity. Its follows that no study of physical fitness would be complete without an analysis of these elements.

Endurance

It is the ability to continue to repeat a movement or series of movement without loss of skill. Aerobic endurance means ‘working with oxygen’.

2. REVIEW OF RELATED LITERATURE

Review of related literature gives valuable insight to the investigator regarding the problem to be solved. The review of literature can be extremely helpful to the investigator in identifying the methods that have been successfully used to solve the particular types of problems. Valuable elements from other studies may include the characteristics of the subjects, data collecting, testing procedure, statistical designs and analysis etcetera. A researches and it was creatively helped to investigator to know deeply about the chosen study and related studies already done

Prakash and Uppal (2012). The study intends to develop physical fitness test battery for high school boys. Thirty two physical fitness test items were preferred or tailored by considering the appearance authority of test items and experts' judgment in the field of physical education. These variables were administered to 180 high school sports boys who had represented their relevant schools at least in inter school, taluk level sport competitions. The data was subjected to principal component factor analysis by using SPSS software. Factor analytic results acquiesced seven factors, which accounted for 69.3 percent of the entire variance in the data set. Six components of physical fitness were identified of which the muscular strength emerged as principal component (with 34.0 percent of total variance) physical fitness. A test batter of six items was developed by considering rotated factor loadings, reliability and objectivity of test variables. The constructed test measures muscular strength, muscular endurance, agility, explosive power and speed of limb factors of high school boys.

Anayanwa et.al, (1997) attempted to establish physical fitness norms for Nigerian boys and girls in the age group 11 years to 18 years. The study included the following test items .Shuttle run : push-ups for boys .chair push-ups for girls : Flexed knee sit ups: 45 meter dash; standing long jump; pull-ups for boys; flexed arms hang for girls; a minute run for subjects 13 to 18 years: The results of the study show. (1)The high correlations were obtained on the test re-test method. The test items were considered objectives (2). The activities can be accepted as true test items for the component of physical fitness, which they support to measure. (3) In most of the test items the performance of the boys improved from the lower to upper age level. (4) The boys performed better than girls in all the test activities. (5) The mean score revalued that the girls of lower age level tend to posses better physical fitness status than the girls of the upper levels.

Shanmugam Vairamani (1996) constructed an agility test for boys of age ranging from 11 years to 15 years belonging to Kendriya Vidyalaya of Madras region in the state of Tamilnadu. For this purpose four thousand eight hundred and forty eight boys were selected from all K.V.S of Tamilnadu state. It was hypothesized that the new agility test might not be reliable and valid. For establishing reliability and validity of the newly constructed test the scores of the constructed test were correlated with the scores of the existing valid and reliable test that measured the same trait. The two criterion test selected were one Boomerang (Right) 1946 and the second the zig zag run test of (The Texasran 1974). The test scores were correlated by applying the Person Product moment correlation and interclass correlation method. He has obtained a reliability coefficient of different group and total population ranging from 0.75 to 0.99 which were highly significant and a validity coefficient ranged from 0.85 to 0.93 which shows a high validity. He had constructed a norm scale by using hull scale.

Rajasree (1995) conducted a study on the construction of norms physical fitness for school girls of the age ranging from 12 to 15 years. 100 subjects were selected as subjects. They were administered the European physical fitness test. The selected variables were shuttle run, sit – ups, standing broad jump, sit and reach and vertical jump. Mean, standard deviation and hull scale were employed for statistical analysis. In shuttle run as per the qualitative grading for the constructed norms, 2 were poor, 12 were good and 71 were excellent. In sit-ups as per the qualitative grading for the constructed norms 19 were poor, 9 were good and 7 were excellent. In standing broad jump as per the qualitative grading for the constructed norms 32 were poor, 13 were good and 3 were excellent. In sit and reach 22 were poor, 20 were good and 5 were excellent and in vertical jump 79 were poor no one was good and 19 were found to be excellent.

Dhandapani (1990) conducted a study on construction of physical fitness norms for school boys of eleven to sixteen years of age of South Arcot and Trichy Districts and critical analysis of the selected physical variables for the purpose of the study 7300 boys were selected as subjects. He selected arm / shoulder muscular endurance, abdominal / hip muscular endurance, agility, explosive power of legs, speed and circulatory / respiratory endurance variables. Percentile scale was used to construct norms. As a result he concluded poor performance in school boys in the above variables.

Yadav (1986) conducted a study on standardization of physical fitness norms for the school children of Haryana (13 to 16 Years of age) with the purpose of estimating the

fitness and comparing the standard of physical fitness of urban and rural boys of Haryana. For the purpose of this study 3600 school boys of the twelve districts of Haryana state were randomly selected and the performance of the boys were recorded on 50mts dash, shotput, standing broad jump, zig zag run, situps and step up tests. The norms in terms of percentile rank of said group were developed.

OVERVIEW OF STUDIES

There are many research related to development of norms for particular games, sports, physical fitness however the selection norms for probable is not so for available. Development of norms as selection criteria, especially for the Indian athletes is a demand of the day. Since the present investigator is devoted to established suitable selection criteria' for age wise to select the talented probable boys and girls.

3. METHODOLOGY

In order to take any problem, proper method or methods should be selected in advance. The decision about the method depends on the nature of the problem selected and the kind of data necessary for its solution (Sukhia, 1960). The research methodology is the general pattern of organizing the procedure for collecting valid and reliable data for an investigation. It gives a detailed description of the research procedures that are followed during the investigation.

3.1 Selection of Subjects

Main objective of the study was to construct norms for 10 to 14 years boys and girls of track and field probable. For this purpose 3000 boys and 2600 girls from different divisions of Karnataka state were randomly selected to serve as subjects.

3.2 Selection of Tests

Test comprises of 3 components such as speed, agility and cardiovascular endurance. Every year the sports bodies of the government organizations would conduct selection trails to select boys and girls for track and field events as probable for sports schemes with the help of qualified coaches. The tests were conducted during selection trails to find out the motor abilities like speed, strength and endurance will be used for the study. These data are collected in sports bodies of government organizations. Hence for the purpose of the said study the required data was collected from the concerned department from past fourteen years.

3.3 Criterion Measures

Sl. No	Variables	Tests	Criterion measure
1.	Speed	30 Meter Flying Start	In Secs.
2.	Strength	Standing Broad Jump	In Centimeters
3.	Endurance	800 Meters Run	In Secs.

3.4 Pilot Study

The researcher conducted a pilot study with hundred players who were not subjects of the research study to determine the methods of testing, evaluate the competency of the researcher testing, recording the timings and scores and field equipments used in the present investigation.

3.5 Reliability of Data

The reliability of the data was ensured by establishing the instrument reliability, subject reliability and tester's reliability.

3.5.1 Instrument Reliability: Four electronic stop watches, non stretchable steel tapes were used in this study. The instruments were used from standard companies and their calibrations were accepted as reliable at par with international standards. The measurements were collected twice and correlated for reliability.

3.5.2 Tester's Reliability

The tester's competency was established together with reliability of test. To determine the reliability of the test, the performance of ten subjects were recorded twice under similar conditions by the investigator with the help of suitable and appropriate guidance. This was done by the test and retest method on consecutive days. The repeated measurement of subjects was conducted on the selected predictor variables to determine reliability in a univariate situation.

3.5.3 Reliability of the Subjects: The co-efficient of Correlation of speed ('r'=0.82); strength ('r'=0.80) and endurance ('r'=0.90) indicated the subject reliability because the same subjects were used under similar conditions by the same test.

3.6 Test Administration Procedure

The test items were administered to all the subjects by the research scholar himself. The scores of each test items were recorded by the research scholar on the basis of performance in test. Each subject followed his own warming up procedure before actual performance. The subjects were given adequate demonstration, practice trials and required instructions for all tests. The subjects were exhorted to give their best performance.

3.7 Collection of Data

The data was collected by administering the test for the selected test items during the summer coaching camps and regular training sessions, different ranking Athletic events and inter-district athletic championships.

3.8 Statistical Procedure

The data, which was collected by administering test, was statistically treated to develop norms for all the test items. Three scales, namely, Percentile Scale, Hull Scale and 7 Sigma Scale were constructed. Further the scores were classified into five grades i.e., Very Good, Good, Average, Poor and Very Poor. The researcher also used 't' test analysis to compare the speed, strength and endurance among probable athletes over sex and age factors.

4. ANALYSIS, INTERPRETATIONS AND DISCUSSION

The data pertaining to athletic test items was collected from 5600 students with age range from 10 to 14 years. The data was analyzed and the findings were presented in three different sections. The first section deals with percentile scale and evaluation standards of probabilities of 10 to 12 year boys and girls and 12 to14 boys and girls groups. Second section deals with T-scale, Hull scale, Sigma scale. The Percentile scale was constructed on the basis of students score in terms of his/her standing in specified groups. The third section deals with comparison of speed, strength and endurance among probable athletes over sex and age.

SECTION-I

EVALUATION STANDARDS

The standards of evaluation are presented from Table-1 to 3 for evaluation of students. Standards of evaluation were based mean and Standard deviation values.

TABLE-1: EVALUATION STANDARDS FOR SPEED (IN SECS.)

Standards	Score Limit for 10 to 12 years Age Group		Score Limit for 12 to 14 years Age Group	
	Boys	Girl	Boys	Girls
Excellent	< 4.09	< 4.21	<3.99	< 4.02
Good	4.10 – 4.29	4.22 – 4.44	4.00 – 4.15	4.03 – 4.19
Average	4.30 – 4.51	4.45 – 4.67	4.16 – 4.43	4.20 – 4.43
Fair	4.52 – 4.71	4.68 – 5.09	4.44 – 4.77	4.44 – 4.81
Poor	> 4.72	> 5.10	> 4.78	> 4.82

The table-1 shows the evaluation of standards of speed for boys and girls for both 10 to 12 years and 12 to 14 years age groups.

TABLE-2: EVALUATION STANDARDS FOR STRENGTH (IN METERS)

Standards	Score Limit for 10 to 12 years Age Group		Score Limit for 12 to 14 years Age Group	
	Boys	Girls	Boys	Girls
Excellent	> 2.14	> 1.99	> 2.20	> 2.10
Good	2.15 – 1.99	1.82 to 1.98	2.07 to 2.19	1.96 to 2.09
Average	2.00 – 1.84	1.81 to 1.70	1.91 to 2.06	1.80 to 1.95
Fair	1.85 – 1.71	1.69 to 1.50	1.75 to 1.90	1.55 to 1.79
Poor	<1.72	< 1.49	> 1.74	< 1.54

The table-2 shows the evaluation of standards of strength for boys and girls for both 10 to 12 years and 12 to 14 years age groups.

TABLE-3: EVALUATION STANDARDS FOR ENDURANCE (IN MINUTES)

Standards	Score Limit for 10 to 12 years Age Group		Score Limit for 12 to 14 years Age Group	
	Boys	**Girls**	**Boys**	**Girls**
Excellent	< 2.47	< 2.45	< 2.39	< 2.21
Good	2.48 to 3.10	2.46 to 3.25	2.40 to 2.58	2.22 to 2.51
Average	3.11 to 3.58	3.26 to 3.99	2.59 to 3.29	2.52 to 3.20
Fair	3.59 to 4.44	4.00 to 4.30	3.30 to 4.12	3.21 to 3.56
Poor	> 4.45	> 4.31	> 4.13	> 3.57

The table-3 shows the evaluation of standards of endurance for boys and girls for both 10 to 12 years and 12 to 14 years age groups.

SECTION – II

T-SCALE, HULL SCALE AND SIGMA SCALE

In this section T scale, Hull scale, and Sigma scale were constructed. It is considered as standard scales because it is based on mean and standard deviation values. These scales for the probabilities and age ranging from 10 to 12 and 12 to 14 years have been presented in Table-4 to 9.

TABLE-4: NORMS FOR SPEED FOR 10 TO 12 YEARS AGE GROUP

Boys			Percentage	Girls		
T Scale	Hull Scale	Sigma Scale		T Scale	Hull Scale	Sigma Scale
2.40	3.01	3.21	100^{th}	3.20	3.25	3.27
2.81	3.30	3.46	90^{th}	3.50	3.53	3.02
3.21	3.58	3.70	80^{th}	3.59	3.23	3.44
3.62	3.87	3.95	70^{th}	3.30	3.73	3.87
4.03	4.15	4.20	60^{th}	4.01	4.22	4.29
4.44	4.44	4.44	50^{th}	4.72	4.72	4.72
4.85	4.73	4.69	40^{th}	5.43	5.22	5.15
5.26	5.01	4.93	30^{th}	6.14	5.71	5.57
5.67	5.30	5.18	20^{th}	6.85	6.21	6.00
6.08	5.33	5.42	10^{th}	7.56	6.71	6.42
6.49	5.61	5.67	0^{th}	8.27	7.20	6.85

Table-4 shows the best scores of speed are at 100th percentile and the lowest scores are at Zero percentile for age group of 10 to 12 year boys and girls. The best scores are at top of table and the lowest scores are at the bottom of table.

TABLE-5: NORMS FOR STRENGTH FOR 10 TO 12 YEARS AGE GROUP

Boys			Percentage	Girls		
T Scale	Hull Scale	Sigma Scale		T Scale	Hull Scale	Sigma Scale
3.17	2.00	2.66	100th	3.08	2.67	2.54
2.92	1.98	2.51	90th	2.81	2.48	2.38
2.66	1.96	2.36	80th	2.54	2.29	2.21
2.41	1.94	2.21	70th	2.27	2.11	2.05
2.16	1.93	2.06	60th	2.00	1.92	1.89
1.91	1.91	1.91	50th	1.73	1.73	1.73
1.66	1.89	1.76	40th	1.46	1.54	1.57
1.40	1.87	1.61	30th	1.19	1.35	1.41
1.15	1.86	1.45	20th	0.92	1.17	1.25
0.90	1.84	1.30	10th	0.65	0.98	1.08
0.65	1.82	1.15	0th	0.39	0.79	0.92

Table-5 shows the highest scores of long jump are at 100th percentile and the lowest scores are at Zero percentile for age group of 10 to 12 year boys and girls. The highest scores are at top of table and the lowest scores are at the bottom of table.

TABLE-6: NORMS FOR ENDURANCE FOR 10 TO 12 YEARS AGE GROUP

Boys			Percentage	Girls		
T Scale	Hull Scale	Sigma Scale		T Scale	Hull Scale	Sigma Scale
2.30	2.28	2.35	100th	2.42	2.44	2.40
2.28	2.26	2.30	90th	2.32	2.30	2.42
2.32	2.30	2.36	80th	2.40	2.32	2.45
2.40	2.36	2.38	70th	2.45	2.34	2.92
2.59	2.55	2.58	60th	2.70	2.57	2.99
3.02	3.00	3.02	50th	3.05	3.00	3.05
3.05	3.01	3.06	40th	3.12	3.10	3.12
3.11	3.09	3.12	30th	3.15	3.18	3.22
3.15	3.12	3.15	20th	3.20	3.22	3.28
3.20	3.17	3.21	10th	3.25	3.28	3.34
3.26	3.23	3.31	0th	3.57	3.54	3.55

Table-6 shows the best scores of endurance are at 100th percentile and the lowest scores are at Zero percentile for age group of 10 to 12 year boys and girls. The best scores are at top of table and the lowest scores are at the bottom of table.

TABLE-7: NORMS FOR SPEED FOR BELOW 12 TO 14 YEARS AGE GROUP

Boys			Percentage	Girls		
T Scale	Hull Scale	Sigma Scale		T Scale	Hull Scale	Sigma Scale
3.07	3.00	2.99	100th	3.20	3.22	3.24
3.22	3.20	3.27	90th	3.34	3.32	3.28
3.32	3.35	3.55	80th	3.35	3.40	3.42
3.46	3.74	3.83	70th	3.40	3.62	3.74
3.92	4.06	4.11	60th	3.87	4.06	4.12
4.39	4.39	4.39	50th	4.50	4.50	4.50
4.85	4.71	4.66	40th	5.13	4.94	4.88
5.31	5.04	4.94	30th	5.76	5.38	5.26
5.78	5.36	5.22	20th	6.39	5.82	5.63
6.24	5.69	5.50	10th	7.02	6.26	6.01
6.71	6.01	5.78	0th	7.65	6.71	6.39

Table-7 shows the best scores of speed are at 100th percentile and the lowest scores are at Zero percentile for age group of 12 to 14 years age group boys and girls. The best scores are at top of table and the lowest scores are at the bottom of table.

TABLE-8: NORMS FOR STRENGTH FOR 12 TO 14 YEARS AGE GROUP

Boys			Percentage	Girls		
T Scale	Hull Scale	Sigma Scale		T Scale	Hull Scale	Sigma Scale
3.24	2.86	2.74	100th	3.16	2.75	2.61
2.99	2.69	2.58	90th	2.88	2.56	2.45
2.74	2.51	2.43	80th	2.61	2.37	2.29
2.48	2.33	2.28	70th	2.34	2.18	2.13
2.23	2.16	2.13	60th	2.07	1.99	1.96
1.98	1.98	1.98	50th	1.80	1.80	1.80
1.73	1.80	1.83	40th	1.53	1.61	1.64
1.48	1.63	1.68	30th	1.26	1.42	1.47
1.22	1.45	1.53	20th	0.99	1.23	1.31
0.97	1.27	1.38	10th	0.72	1.04	1.15
0.72	1.10	1.22	0th	0.45	0.86	0.99

Table-8 shows the highest scores of long jump are at 100th percentile and the lowest scores are at Zero percentile for age group of 12 to 14 years age group boys and girls. The highest scores are at top of table and the lowest scores are at the bottom of table.

TABLE-9: NORMS FOR ENDURANCE FOR 12 TO 14 YEARS AGE GROUP

Boys			Percentage	Girls		
T Scale	Hull Scale	Sigma Scale		T Scale	Hull Scale	Sigma Scale
2.19	2.12	2.57	100^{th}	2.42	2.30	2.42
2.88	2.71	2.99	90^{th}	2.45	2.49	2.46
2.90	2.78	2.80	80^{th}	2.50	2.60	2.50
3.26	3.20	3.26	70^{th}	2.60	2.70	2.85
3.56	3.60	3.58	60^{th}	3.13	3.30	3.36
3.65	3.65	3.65	50^{th}	3.71	3.71	3.70
4.34	4.13	4.06	40^{th}	4.28	4.11	4.05
5.03	4.62	4.48	30^{th}	4.86	4.51	4.40
5.72	5.10	4.89	20^{th}	5.44	4.92	4.74
6.42	5.59	5.31	10^{th}	6.01	5.32	5.09
7.11	6.07	5.72	0^{th}	6.59	5.72	5.43

Table-9 shows the best scores of endurance are at 100th percentile and the lowest scores are at Zero percentile for age group of 12 t 14 years age group boys and girls. The best scores are at top of table and the lowest scores are at the bottom of table.

SECTION-II

COMPARISON OF PERFORMANCE AMONG GROUPS

In the present study the subjects were grouped on the basis of chronological age and their sex in which they were probable athletes to examine significance difference of performance among two age groups in athletics events. For this purpose, t- test was employed to know the level of significance differences which have been presented from table 10 to 13.

Table-10: Differences in the Speed, Strength and Endurance performance between probable athlete boys and girls of 10 to 14 years age group.

Variables	Age Group	N	Mean	Standard Deviation	df	't' value	Level of Sig.
Speed	Boys	2000	4.528	0.422	3998	6.41 P >0.01	**
	Girls	2000	4.644	0.691			
Strength	Boys	2000	1.824	0.254	3998	8.53 P >0.01	**
	Girls	2000	1.753	0.272			
Endurance	Boys	2000	3.509	1.072	3998	3.48 P >0.01	**
	Girls	2000	3.393	1.035			

**Significant at 0.01 level.

The obtained 't' value 6.41 of the probable boys and girls groups of speed has found to be significant at 0.01 level. It indicates that there is a significant difference in the

speed performance of the probable athlete boys and girls and the obtained 't' value 8.53 of the probable boys and girls groups of strength has found to be significant at 0.01 level. It indicates that there is a significant difference in the strength performance of the probable athlete boys and girls. Further the obtained 't' value 3.48 of the probable boys and girls groups of endurance has found to be significant at 0.01 level. It indicates that there is a significant difference in the endurance performance of the probable athlete boys and girls.

Table-11: Differences in the Speed, Strength and Endurance performance between 10-12 years and 12 to 14 years age group probable athletes.

Variables	Age Group	N	Mean	Standard Deviation	df	't' value	Level of Sig.
Speed	10 to 12 years	2000	4.512	0.517	1998	4.99 P >0.01	**
	12 to 14 years	2000	4.429	0.535			
Strength	10 to 12 years	2000	1.862	0.268	1998	5.83 P >0.01	**
	12 to 14 years	2000	1.912	0.274			
Endurance	10 to 12 years	2000	3.377	1.091	1998	5.89 P >0.01	**
	12 to 14 years	2000	3.189	0.919			

**Significant at 0.01 level.

The obtained 't' value 4.99 of the 10 to 12 years and 12 to 14 years groups of speed has found to be significant at 0.01 level. It indicates that there is a significant difference in the performance of the school probable boys and girls in speed of the above 10 to 12 years and 12 to 14 years groups. The obtained 't' value 5.83 of the 10 to 12 years and 12 to 14 years groups of strength has found to be significant at 0.01 level. It indicates that there is a significant difference in the performance of the school probable boys and girls in strength of the above 10 to 12 years and 12 to 14 years groups. The table further shows that the obtained 't' value 5.89 of the 10 to 12 years and 12 to 14 years groups of strength has found to be significant at 0.01 level. It indicates that there is a significant difference in the performance of the school probable boys and girls in endurance of the above 10 to 12 years and 12 to 14 years groups.

Table-12: Differences in the Speed, Strength and Endurance performance of probable boys between 10 to 12 years and 12 to 14 years age group.

Variables	Age Group	N	Mean	Standard Deviation	df	't' value	Level of Sig.
Speed	10 to 12 years	1000	4.44	0.409	1998	2.76 P >0.01	**
	12 to 14 years	1000	4.386	0.463			
Strength	10 to 12 years	1000	1.907	0.252	1998	6.48 P >0.01	**
	12 to 14 years	1000	1.98	0.252			
Endurance	10 to 12 years	1000	3.588	1.104	1998	7.78 P >0.01	**
	12 to 14 years	1000	3.237	0.905			

**Significant at 0.01 level.

The obtained 't' value 2.73 of the 10 to 12 years and 12 to 14 years groups of speed has found to be significant at 0.01 level. It indicates that there is a significant difference in the performance of the school probable boys in speed of the above 10 to 12 years and 12 to 14 years groups and the obtained 't' value 6.48 of the 10 to 12 years and 12 to 14 years groups of strength has found to be significant at 0.01 level. It indicates that there is a significant difference in the performance of the school probable boys in strength of the above 10 to 12 years and 12 to 14 years groups. The table further shows that the obtained 't' value 7.78 of the 10 to 12 years and 12 to 14 years groups of strength has found to be significant at 0.01 level. It indicates that there is a significant difference in the performance of the school probable boys in endurance of the above 10 to 12 years and 12 to 14 years groups.

Table-13: Differences in the Speed, Strength and Endurance performance of probable girls between 10 to 12 years and 12 to 14 years age group.

Variables	Age Group	N	Mean	Standard Deviation	df	't' value	Level of Sig.
Speed	Below 12	1000	4.718	0.709	1998	7.27 P >0.01	**
	12 to 14	1000	4.5	0.63			
Strength	Below 12	1000	1.73	0.269	1998	5.71 P >0.01	**
	12 to 14	1000	1.799	0.271			
Endurance	Below 12	1000	3.545	1.051	1998	9.76 P >0.01	**
	12 to 14	1000	3.11	0.939			

**Significant at 0.01 level.

The obtained 't' value 7.27 of the 10 to 12 years and 12 to 14 years groups of speed has found to be significant at 0.01 level. It indicates that there is a significant difference in the performance of the school probable girls in speed of the above 10 to 12 years and 12 to 14 years groups. The obtained 't' value 5.71 of the 10 to 12 years and 12 to 14 years groups of strength has found to be significant at 0.01 level. It indicates that

there is a significant difference in the performance of the school probable girls in strength of the above 10 to 12 years and 12 to 14 years groups. The table further shows that, the obtained ‘t’ value 9.76 of the 10 to 12 years and 12 to 14 years groups of strength has found to be significant at 0.01 level. It indicates that there is a significant difference in the performance of the school probable girls in endurance of the above 10 to 12 years and 12 to 14 years groups.

5. SUMMARY, CONCLUSION AND RECOMMENDATIONS:

5.1 Summary

Contemporary performance demands are so high in track and field that athletes with average ability are not going to succeed, even if the best training methods are employed. This stresses the importance of correct selection procedures for a particular event. Unfortunately the procedures are not always efficient in our Sports centers, reflected in a high drop-out rate and studies showing that 50% of those accepted fail to achieve the expected results. With this researcher felt that it is the right time to develop specific norms according to age which has also necessary to select young athlete at an early stage endeavored with suitable physical and motor qualities region wise who can better future prospect in a given event. To formulate the standard norms on the basis of selected anthropometric and motor quality variables in the form of percentile to determines their present fitness status and potentiality for specific sports activity. Hence researcher found that there is a dire need for selection procedures to guide young boys and girls, based on model anthropometric measurements and physical performance characteristics. On this view the main purpose of this study is to construct the norms for boys and girls to identify the required motor abilities like speed, strength and endurance to be selected the right event at the age of 10 to 14 years among boys and girls. The purpose of the study was to construct norms for 10 to 14 years boys and girls of track and field probable. For this purpose 3000 boys and 2600 girls from different divisions of Karnataka state were randomly selected to serve as subjects. Test comprises of motor qualities such as speed, strength and endurance. Every year the sports bodies of the government organizations would conduct selection trails to select boys and girls for track and field events as probable for sports schemes with the help of qualified coaches. The tests were conducted during selection trails to find out the motor abilities like speed, strength and endurance was used for the study. These data are collected in sports bodies of government organizations. The performance of probable athletes for three tests such as 30 Flying Start, Standing Broad Jump and 800 meters run/walk were chosen as the criterion measures. The data was collected by administering the test for the selected test items during the summer coaching camps and regular training sessions, different ranking Athletic events and inter-district athletic Championships. The data collected by administering test, was statistically treated to develop norms for all the test items. Three scales, namely, Percentile Scale, T Scale, Hull Scale and Sigma Scale were constructed.

Further the scores were classified into five grades i.e., Very Good, Good, Average, Poor and Very Poor. The researcher also used 't' test analysis to compare the speed, strength and endurance among probable athletes over sex and age factors.

5.2 Conclusion

On the basis of the percentile norms in the performance of 30 Mts. Flying Start, Standing Broad Jump, 800 mts. Run for 10 to 14 year boys the following conclusion were drawn.

1. There is a significant difference in the speed performance of the probable athlete boys and girls. The probable athlete boys group performed better in speed as compared to the probable athlete girls
2. There is a significant difference in the strength performance of the probable athlete boys and girls. The probable athlete boys group performed better in strength as compared to the probable athlete girls
3. There is a significant difference in the endurance performance of the probable athlete boys and girls. The probable athlete girls group performed better in endurance as compared to the probable athlete boys.
4. There is a significant difference in the performance of the school probable boys and girls in speed of the above 10 to 12 years and 12 to 14 years groups. The subjects of 12 to14 years of age group performed better in speed as compared to the school probable boys and girls of 10 to 12 years of age.
5. There is a significant difference in the performance of the school probable boys and girls in strength of the above 10 to 12 years and 12 to 14 years groups. The subjects of 12 to 14 years of age group performed better in strength as compared to the school probable boys and girls of 10 to 12 years of age.
6. There is a significant difference in the performance of the school probable boys and girls in endurance of the above 10 to 12 years and 12 to 14 years groups. The subjects of 12 to 14 years of age group performed better in endurance as compared to the school probable boys and girls of 10 to 12 years of age.
7. There is a significant difference in the performance of the school probable boys in speed of the above 10 to 12 years and 12 to 14 years groups. The subjects of 12

to14 years of age group performed better in speed as compared to the school probable boys of 10 to 12 years of age.

8. There is a significant difference in the performance of the school probable boys in strength of the above 10 to 12 years and 12 to 14 years groups. The subjects of 12 to 14 years of age group performed better in strength as compared to the school probable boys of 10 to 12 years of age.

9. There is a significant difference in the performance of the school probable boys in endurance of the above 10 to 12 years and 12 to 14 years groups. The subjects of 12 to 14 years of age group performed better in endurance as compared to the school probable boys of 10 to 12 years of age.

10. There is a significant difference in the performance of the school probable girls in speed of the above 10 to 12 years and 12 to 14 years groups. The subjects of 12 to 14 years of age group performed better in speed as compared to the school probable girls of 10 to 12 years of age.

11. There is a significant difference in the performance of the school probable girls in strength of the above 10 to 12 years and 12 to 14 years groups. The subjects of 12 to 14 years of age group performed better in strength as compared to the school probable girls of 10 to 12 years of age.

12. There is a significant difference in the performance of the school probable girls in endurance of the above 10 to 12 years and 12 to 14 years groups. The subjects of 12 to 14 years of age group performed better in endurance as compared to the school probable boys of 10 to 12 years of age.

5.3 Recommendations

On the basis of the finding of the investigation, the following recommendations were drawn.

1. A similar study may be conducted to construct norms for the probable of high school boys and girls separately.

2. A similar study may be conducted to construct norms for sports school boys and girls separately.

3. A similar study may be conducted to construct norm for the performance variables in individual and team games both for boys and girls separately.

4. A similar study may be conducted to construct norms for the college boys and girls separately.

5. A study of similar nature may be conducted to construct national norms in all the athletic events both for boys and girls separately.

6. A similar study may be conducted to construct norms for the sports college boys and girls separately.

7. The present study may help to frame different training methods by laying emphasis on the development of fitness and fundamental skills which are significantly related to athletic performance.

REFERENCES

Bitcon Lawrence E., "Validation of Four Item Fitness and Test Norms for High School Boys in the IOWA." Completed Research in Health, Physical Education and Recreation, (1995), 20(1): 37.

Clarke, Harrison H. and Clarke, David H. "Application of Measurement to Physical Education", 6th Ed., Englewood Cliffs: N.J. Prentice Hall Inc., 1989.

Daniel, Rajmumar, "Construction of Norms in Selected Athletic Event for High School Boys in Thirruvananthapuram District in Kerala." Unpublished M.Phil. Thesis, Alagappa University, Karaikudi, 1996.

Dhandapain Somasundaram, "Construction of Norms for School Boys of Eleven to Sixteen Years of Age on Critical Analysis of the Selected Physical Variables." Unpublished M.Phil. Thesis, Alagappa University, Karaikudi, 1990.

Garrette, Henry E. "Statistics in Psychology and Education", Vakils fifer and Private Ltd., Bombay 1966.

Gowada, Seetharama, " Construction of Norms in Selected Athletic Events for the Under Graduate Physical Education Men Students in Karnataka State, 20 to 25 Years of Aged." Unpublished M.Phil. Thesis, Karaikudi: Alagappa University, July 1995.

Hardayal Singh. "Science of Sports Training", New Delhi: D.V.S. Publications, 1991

Inbarajan, Gurusamy, "Construction of Norms is Selected Athletic Events for Under Graduate Physical Education Men Students of Tamilnadu". Unpublished M. Phil. Thesis, Alagappa University, Karaikudi, 1997.

Jackson Allen, Jeffrey Solomon and Mary Studek, "One Mile Walk Test Reliability, Validity and Norms for Young Adults", Research Quarterly for Exercise and Sports Supplement (1992) 63(1): 52.

Kamlesh, M.L. and Sangaral, M.S. "Principle and History of Physical Education", Ludhiyana: Prakash Brothers, 1981.

Kesavan, " Construction of Norms for Health Related Physical Fitness Tests for High School Boys in Oharmapuri, Salem, Periyiar and Nilgiris District." Unpublished M.Phil. Thesis, Karaikudi Alagappa University, 1990.

Koul, Lokesh. "Methodology of Educational Research", Vikas Publishing House Private Ltd., 1984.

Murugapparaja, "Construction of Norms for Health Related Physical Fitness Test for high school Boys in Pasumpon Muthuramalingam and Pudukkottai districts and Influence of selected Calisthenic Exercises on Them." Unpublished M.Phil. Thesis, Karaidudi: Alagappa University, July 1992.

Muthusamy Ayyakkannanar "Construction of Norms for Physical Fitness Among School Girls of Age 13 to 15 years of the Union Territory of Pondicherry." Unpublished M.Phil Thesis, Karaikudi: Alagappa University, July 1995.

Pillai, Athicha "Computation of Norms for 12 Minutes Run and Walk among the School Boys Unpublished Ph.D. Thesis, Karaikudi: Alagappa University, 1991.

Rajasree Viayarajan Mulangara, "Construction of Norms for Physical Fitness Among School Girls of Age Ranging from 12 to 15 years, "Unpublished M.Phil Thesis, Karaikudi: Alagappa University, July 1995.

Ranjit Kunhikannan, "Construction of Norms in Selected Athletic Events for Certificate Course Physical Education Students in Kerala", Unpublished M.Phil. Thesis, Karaikudi: Alagappa University, 1995.

Rao Hanumantha Bommedevara, "Construction of Norms for Health Related Physical Fitness Test for High School Boys of Fifteen Years of Age in Andhra Pradesh", Unpublished M.Phil Thesis, Karaikudi: Alagappa University, July 1993.

Senthil Kumar, "Construction of Norms for Health related Physical Fitness Test of Kanyakumari, Tirunveli, Chidambaranar and Madras District School Boys", Unpublished M.Phil. Thesis, Karaikudi: Alagappa University, July 1990.

Sharma, R.A., "Elementary Statistics in Education and Psychology." Vinay Rakheja Publication, Meerut, 2005.

Sing Reet Mohinder, "Physical Norms of Punjab High School Boys", Unpublished Ph.D. Thesis, Chandigarh: Punjab University, 1986.

Singh Surjit, "Establishing Norms for Physical Fitness of Primary School Children of Punjab and Harayana." Unpublished Ph.D. Theses, Patiala: Punjab University, June 1996.

Uppal, A.K., "Principles of Sports Training". New Delhi: Friends Publication, 1992.

Vairamani Shanmugam, "Construction of Test and Compilation of Norms for the Measurements of Agility of Kendriya Vidyalaya Boys of Madras Region." Unpublished PhD. Thesis, Karaikudi : Alagappa University, 1996.

Yadav Bhup Singh, "Standardization of Physical Fitness Norms of School children of Haryana", Unpublished Ph.D. Thesis, Kuruksetra University, Kurusetra, 1986.

CONTENTS

Chapter		Title	Page No.
1.		**INTRODUCTION**	**1-8**
	1.1	Justification of the Study	5
	1.2	Statement of Problem	5
	1.3	Objectives of the Study	6
	1.4	Limitations	6
	1.5	Delimitations	7
	1.7	Hypotheses	7
	1.8	Definitions of Terms	7
2.		**REVIEW OF RELATED LITERATURE**	**9-11**
3.		**METHODOLOGY**	**12-14**
	3.1	Selection of Subjects	12
	3.2	Selection of Tests	12
	3.3	Criterion Measures	12
	3.4	Pilot Study	12
	3.5	Reliability of Data	13
	3.6	Test Administration Procedure	13
	3.7	Collection of Data	13
	3.8	Statistical Procedure	14
4.		**ANALYSIS, INTERPRETATIONS AND DISCUSSION**	**15-22**
5.		**SUMMARY, CONCLUSION AND RECOMMENDATIONS:**	**23-25**
	5.1	Summary	23
	5.2	Conclusion	24
	5.3	Recommendations	25
		REFERENCES	**26**